

PREVAILING WINDS.

As is generally the case, the prevailing winds are strictly conformed in direction to the "law of the winds." The arrows which represent their direction veer around the area of high pressure in the usual way, *i. e.*, with the hands of a clock. The extreme maximum movements of the wind have been at Breckenridge, 7,650 miles; at Cape Henry, 9,147; at Cape May, 6,907; at Cleveland, 7,281; at Escanaba, 7,217; at Long Branch, 9,242; at Pike's Peak, 14,734; at Sandy Hook, 10,917.

The extreme minimum movements have been at Memphis, 1,700 miles, and at Shreveport, 1,886. The calm-area is, therefore, coterminous with that of high pressure.

NAVIGATION.

On the lower left side of Map No. III, is given a Table showing the varying stages of the rivers for the month. From this table, it is seen, the rivers have fluctuated but very little, and almost inappreciably; some, only a few inches; none, more than eight feet. With the exception of the Ohio, at Louisville, the Missouri, at Yankton, and the Red River, at Shreveport, all the rivers have been slowly falling during October, the greatest falls being reported toward the close of the month.

TEMPERATURE OF WATER.

The water temperatures, from observations taken at the bottom, have been as follows:

	MAXIMUM.	MINIMUM.		MAXIMUM.	MINIMUM.
Lower Missouri river.....	62° to 67°	53° to 39°	From Portland, Maine, to		
Upper Mississippi river.....	60 to 67	53 to 39	Cape Cod.....	55 to 65	51 to 56
Red river.....	78	62	From Cape Cod to Cape		
Ohio river.....	64 to 70	51 to 46	Henry.....	63 to 70	56 to 60
The Texas coast.....	79 to 81	65 to 62	Lake Erie.....	63	52
The South Atlantic coast..	72 to 81	70 to 59	Lake Michigan.....	56 to 62	51 to 49
			Lake Superior.....	49 to 52	45 to 42

ATMOSPHERIC ELECTRICITY.

(1.) *Thunder and lightning.*—There is not much change to note in the frequency of thunder and lightning, since September. There were numerous electrical storms, even in the northern part of the country and on the lakes. Zig-zag lightning was reported at Duluth on the 25th and Buffalo on the 10th; thunder and lightning at Pembina, D. T., on the 24th and 25th; at Fort Randall, D. T., on the 4th, 24th and 28th; Rock Island Arsenal, Ill., on the 27th; Fort Wallace, Kansas, on the 26th; at West Point, on the 27th; Fort Adams, R. I., on the 28th; Golden City, Col., on the 24th; at Louisville, Ill., on the 28th. On the night of the 27th a thunder-storm passed over Hartford, and on the 30th, at 5 a. m., a smart thunder-shower passed over New York city.

(2.) *Auroras.*—October, at least the early part of the month, was marked for its auroral displays. Among the most conspicuous of these were the auroras of the 2d, 3d, 4th, 5th, 6th, 7th, 12th, 13th, 14th, 15th, 16th and 17th. That of the 3d and 4th was extraordinary and extensive in its manifestations. It was seen at nearly all the northern stations, where the weather was favorable, *e. g.*, Buffalo, Portland, Me., Lexington, Ky., Port Huron, Mich., Peck's Beach and Long Branch, Norfolk. Boston, Atlanta, Wytheville, Va., Duluth, Minn., Eastport, Me., New Haven, Conn., Albany, Chicago Davenport, Iowa, Detroit, Atlantic City, La Crosse, Wis., Keokuk, Iowa, and numerous other stations.

The aurora of the 12th was most distinct at Duluth and Pembina, Dakota, Eastport, Me., and Cornish, Standish and Mt. Desert, Me., and Fall River, Mass.

At Hillsboro', Ohio, an aurora was seen on the 31st.

OPTICAL PHENOMENA.

(1.) *Solar halos* were observed at Milford, Del., on the 16th; at Atlanta, Ga., on the 9th and 21st; at Gainesville, Ga., on the 16th; at Hennepin, Ill., on the 1st and 4th; at Cresco, Iowa, on the 4th and 27th; at Cornish, Me., on the 6th, 17th and 25th; at Florida, Mass., on the 18th; at Litchfield, Mich., on the 9th; at Trenton, N. J., on the 14th; at Waterbury, N. Y., on the 1st, 10th and 24th; at Weldon, N. C., on the 13th; at Belmont Farm, Texas, on the 1st, and at Lewisville, Va., on the 6th and 25th.

(2.) *Lunar halos* have been more numerous than solar, and have prevailed in the latter part of the month. The two phenomena have occurred over nearly the same stations. These halos were observed at Southington, Conn., on the 22d; at Milford, Del., on the 25th; at Gainesville, Ga., on the 8th; at Vevay, Ind., on the 14th and 28th; at Rockford, Iowa, on the 19th; at Cresco, Iowa, on the 23d; at Pine Grove, Ky., on the 21st; at Cornish, Me., on the 22d; at West Waterville, Me., on the 24th; at Standish, Me., on the 23d; at Northampton, Mass., on the 24th; at Andover, Mass., same date; at North Adams, Mass., on the 24th; at Northport, Mich., on the 25th; at Brookhaven, Miss., on the 22d; at Fayette, Miss., on the 25th; at Atco, N. J., on the 20th; at Depauville, N. Y., on the 24th, and at Weldon, N. C., on the 22d.

CAUTIONARY SIGNALS.

The total number of Cautionary Signals ordered for and displayed at ports of the United States during the month of October was eighty-six, (86.) The regulation requires a display of the storm-warning signals at a station whenever the officer, preparing the predictions, judges that at the station, or within a radius of one hundred miles, the wind will reach twenty-five miles an hour, or attain a velocity dangerous to shipping. According to this regulation, the whole number of ordered Cautionary Signals, which are justified by the result, was, for the entire month, sixty-five. This makes the percentage of justifications seventy-five.

MISCELLANEOUS PHENOMENA.

The most striking of these is the extensive and disastrous prevalence of prairie and forest fires, chiefly in Indiana, Ohio and the surrounding districts, during the whole month of October. These are due to artificial causes, combined with the extreme dryness of the interior. The wide ravages of these forest-fires are indicated by the numerous reports of dense smoke, forwarded in the Signal Service returns. These indications came from Breckenridge and St. Paul, Minn.; Toledo, Ohio; Bismarck and Pembina, Dakota, on the 2d and 18th respectively; Omaha, Neb.; La Crosse, Wis.; Long Branch, N. J.; Augusta, Ill.; Cumberland, Woodstock and Falston, Md.; Andover, Mass.; Wet Glaze, Mo.; Plattsmouth, Neb.; Atco, N. J.

(2.) *Migration of birds.*—The migration of wild geese, southward, was first noticed at St. Paul, Minn., on the evening of the 27th, shortly before Storm No. IX and the approach of the area of high pressure and low temperature. At Fort Randall, Dakota, on